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EXAMINER	
PHAN, HANH	
ART UNIT	**PAPER NUMBER**
2633	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/608,406	THOMPSON, WILLIAM A.
	Examiner	**Art Unit**
	Hanh Phan	2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 June 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,12-16,18 and 21-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,12-16,18 and 21-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is responsive to the Amendment filed on 07/22/2004.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 2, 12, 13, 21, 23 and 25-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakamoto et al (US Patent No. 6,490,064) in view of Meli et al (US Patent No. 5,995,259) and further in view of Cearns et al (US Patent No. 5,943,149).

Regarding claim 1, referring to figures 16 and 18, Sakamoto discloses a system for bi-directional transmission of optical signals over a single optical medium (i.e., optical fiber transmission path 224) coupled between at least two nodes (i.e., optical transmission and reception apparatus 212 and 213, Fig. 16), the system utilizing a first optical transmission band for signals traveling in a first direction (i.e., transmitters 220 of optical transmission and reception apparatus 212 generate optical signals of different wavelengths and a multiplexer 221 which wavelength multiplexes optical signals to provide a first optical transmission band for signals traveling in a first direction to receivers 223 of optical transmission and reception apparatus 213, Figs. 16 and 18) and

a second optical transmission band for signals traveling in a second direction (i.e., transmitters 220 of optical transmission and reception apparatus 213 generate optical signals of different wavelengths and a multiplexer 221 which wavelength multiplexes optical signals to provide a second optical transmission band for signals traveling in a second direction to receivers 223 of optical transmission and reception apparatus 212, Figs. 16 and 18), the system comprising:

at least a first combiner/separator unit at a first of the two nodes (i.e., a first circulator filter 225 at the optical transmission and reception apparatus 212, Figs. 16 and 18), the first combiner/separator including an input port, an output port and a bi-directional input/output port for coupling to the single optical medium (i.e., circulator filter 225 including an input port from multiplexer 221 to circulator filter 225, an output port from circulator filter 225 to demultiplexer 222, and a bi-directional input/output port from circulator filter 225 for coupling to the single optical medium 224, Figs. 16 and 18), a first optical filter within the first combiner/separator unit coupled to each of the ports therein, the optical filter being substantially transmissive to optical signals of the first band entering the input port and exiting on the bi-directional input/output port and the filter being substantially reflective for signals of the second band entering the bi-directional input/output port and exiting on the output port (inherently, circulator filter 225 as described above being substantially transmissive to optical signals of the first band entering the input port and exiting on the bi-directional input/output port and the circulator filter 225 being substantially reflective for signals of the second band entering the bi-directional input/output port and exiting on the output port, Figs. 16-20, col. 11,

lines 45-56, col. 12, lines 1-6, 44 and 56-64, col. 13, lines 16-39, line 44 and lines 58-64); and

at least a second combiner/separator unit at a second of the two nodes (i.e., similarly as described above, a second circulator filter 225 at the optical transmission and reception apparatus 213, Figs. 16 and 18), the second combiner/separator (i.e., circulator filter 225) including an input port, an output port and a bi-directional input/output port coupled to the optical medium (i.e., optical fiber transmission 224), a second optical filter within the second combiner/separator unit (i.e., filter 225) coupled to each of the ports therein of the second combiner /separator unit, the second optical filter (i.e., circulator filter 225) being substantially transmissive to optical signals of said second band entering the input port and exiting on the bi-directional input/output port and the filter being substantially reflective for signals of the first band entering the bi-directional input output port and exiting on the single direction output port (Figs. 16-20).

Sakamoto differs from claim 1 in that he does not specifically teach the first optical filter and the second filter are in an alternating arrangement and the use of an optical filter that is transmissive to signals of one optical transmission band traveling in a first direction to one transport path and reflective to signals of a second optical transmission band traveling in an opposite direction to a separate transport path. However, Meli teaches the first optical filter and the second filter (i.e., selective couplers 4, Figs. 1, 3A, 3B and 12) are in an alternating arrangement (see col. 7, lines 9-46 and lines 54-57, and col. 14, lines 5-38) and Cearns teaches the use of an optical filter (i.e., optical filter 20, Fig. 4) that is transmissive to signals (i.e., transmissive to signals $\lambda 1$,

$\lambda 2, \ldots, \lambda 8$) of one optical transmission band traveling in a first direction to one transport path (i.e., transport path 3) and reflective to signals (i.e., reflective to signals $\lambda 10$, $\lambda 11, \ldots, \lambda 16$) of a second optical transmission band traveling in an opposite direction to a separate transport path (i.e., transport path 2)(see col. 5, lines 23-29). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the first optical filter and the second filter are in an alternating arrangement and the use of an optical filter that is transmissive to signals of one optical transmission band traveling in a first direction to one transport path and reflective to signals of a second optical transmission band traveling in an opposite direction to a separate transport path as taught by Meli and Cearns in the system of Sakamoto. One of ordinary skill in the art would have been motivated to do this since Meli suggests in column 7, lines 9-46 and lines 54-57, and col. 14, lines 5-38 and Cearns suggests in column 5, lines 23-29 that using such the first optical filter and the second filter are in an alternating arrangement and the use of an optical filter that is transmissive to signals of one optical transmission band traveling in a first direction to one transport path and reflective to signals of a second optical transmission band traveling in an opposite direction to a separate transport path have advantage of allowing reducing the insertion loss.

Regarding claims 2, 12, 13, and 21, Sakamoto further teaches at least one intermediate node (i.e., one repeater node including elements 225, 280, 281, 225 coupled between the first and second end node), said intermediate node comprising:

at least one the first combiner/separator unit (i.e., a first circulator filter 225)(Fig. 18) and at least one second combiner/separator unit (i.e., a second circulator filter 225)(Fig. 18), and

at least a first and second optical amplifier (280, 281)(Fig. 18), the output port of the first combiner/separator unit (i.e., first circulator filter 225) coupled to the input port of the second combiner/separator unit (i.e., second circulator filter 225) through the first optical amplifier (280), the output port of the second combiner/separator unit (i.e., second circulator filter 225) coupled to the input port of the first combiner/separator unit (i.e., first circulator filter 225) through the second optical amplifier (281)(see Fig. 18);

the first and second combiner/separator units (i.e., first and second circulator filters 225) being alternately coupled within the bi-directional transmission system such that pairs of the first and second combiner/separator units are utilized in combination, the bi-directional ports of the combiner/separator units being coupled to one another (col. 11 of Sakamoto, lines 45-56, col. 12, lines 1-6, 44 and 56-64, col. 13, lines 16-39, line 44 and lines 58-64).

Sakamoto differs from claims 2, 12, 13, and 21 in that he does not specifically teach the optical filter in the first combiner/separator unit and the optical in the second combiner/separator unit are in an alternating arrangement and the use of an optical filter that is transmissive to signals of one optical transmission band traveling in a first direction to one transport path and reflective to signals of a second optical transmission band traveling in an opposite direction to a separate transport path. However, Meli teaches the optical filter in the first combiner/separator unit and the optical in the second

combiner/separator unit are in an alternating arrangement (i.e., selective couplers 4, Figs. 1, 3A, 3B and 12, col. 7, lines 9-46 and lines 54-57, and col. 14, lines 5-38) and Cearns teaches the use of an optical filter (i.e., optical filter 20, Fig. 4) that is transmissive to signals (i.e., transmissive to signals $\lambda 1$, $\lambda 2, \ldots, \lambda 8$) of one optical transmission band traveling in a first direction to one transport path (i.e., transport path 3) and reflective to signals (i.e., reflective to signals $\lambda 10$, $\lambda 11, \ldots, \lambda 16$) of a second optical transmission band traveling in an opposite direction to a separate transport path (i.e., transport path 2)(see col. 5, lines 23-29). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the first optical filter and the second filter are in an alternating arrangement and the use of an optical filter that is transmissive to signals of one optical transmission band traveling in a first direction to one transport path and reflective to signals of a second optical transmission band traveling in an opposite direction to a separate transport path as taught by Meli and Cearns in the system of Sakamoto. One of ordinary skill in the art would have been motivated to do this since Meli suggests in column 7, lines 9-46 and lines 54-57, and col. 14, lines 5-38 and Cearns suggests in column 5, lines 23-29 that using such the optical filter in the first combiner/separator unit and the optical in the second combiner/separator unit are in an alternating arrangement and the use of an optical filter that is transmissive to signals of one optical transmission band traveling in a first direction to one transport path and reflective to signals of a second optical transmission band traveling in an opposite direction to a separate transport path have advantage of allowing reducing the insertion loss.

Regarding claim 23, referring to figures 16 and 18, Sakamoto teaches apparatus, comprising:

means for filtering (i.e., circulator filter 225), and

means for transmitting a first signal in a first signal band from a first path (i.e., the waveband from transmission circuit 210 of apparatus 212 traveling in from 212 to apparatus 213 can be considered as "first band" and the wave band from transmission circuit 210 of apparatus 213 traveling from 213 to apparatus 212 can be considered as "second band") onto an optical medium (i.e., optical fiber transmission line 224) via said means (i.e., circulator filter 225) for filtering, said means (i.e., circulator filter 225) for filtering being substantially transmissive to signals in the first signal band and substantially reflective to signals in a second signal band received from the optical medium onto a path separate from the first path (col. 11, lines 45-56, col. 12, lines 1-6, 44 and 56-64, col. 13, lines 16-39, line 44 and lines 58-64).

Sakamoto differs from claim 23 in that he does not specifically teach wherein means for filtering is adapted to be coupled in an alternating arrangement to a second means for filtering and the use of an optical filter that is transmissive to signals of one optical transmission band traveling in a first direction to one transport path and reflective to signals of a second optical transmission band traveling in an opposite direction to a separate transport path. However, Meli teaches means for filtering is adapted to be coupled in an alternating arrangement to a second means for filtering (i.e., selective couplers 4, Figs. 1, 3A, 3B and 12, col. 7, lines 9-46 and lines 54-57, and col. 14, lines 5-38) and Cearns teaches the use of an optical filter (i.e., optical filter 20, Fig. 4) that is

transmissive to signals (i.e., transmissive to signals λ1, λ2,...,λ8) of one optical transmission band traveling in a first direction to one transport path (i.e., transport path 3) and reflective to signals (i.e., reflective to signals λ10, λ11,...,λ16) of a second optical transmission band traveling in an opposite direction to a separate transport path (i.e., transport path 2)(see col. 5, lines 23-29). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the first optical filter and the second filter are in an alternating arrangement and the use of an optical filter that is transmissive to signals of one optical transmission band traveling in a first direction to one transport path and reflective to signals of a second optical transmission band traveling in an opposite direction to a separate transport path as taught by Meli and Cearns in the system of Sakamoto. One of ordinary skill in the art would have been motivated to do this since Meli suggests in column 7, lines 9-46 and lines 54-57, and col. 14, lines 5-38 and Cearns suggests in column 5, lines 23-29 that using such means for filtering is adapted to be coupled in an alternating arrangement to a second means for filtering and the use of an optical filter that is transmissive to signals of one optical transmission band traveling in a first direction to one transport path and reflective to signals of a second optical transmission band traveling in an opposite direction to a separate transport path have advantage of allowing reducing the insertion loss.

Regarding claims 25 and 28, Sakamoto further teaches wherein the means for transmitting the first signal (Figs. 1, 2 and 5) comprises:

means for modulating (i.e., modulator 12), multiplexing (optical multiplexer 13), and amplifying (i.e., optical amplifier 14) a plurality of input signals to form the first signal, and

wherein the apparatus further connects to the optical medium (Figs. 1, 2 and 5).

Sakamoto differs from claims 25 and 28 in that he does not specifically teach wherein the optical filter is adapted to be coupled in an alternating arrangement to a second filter and the use of an optical filter that is transmissive to signals of one optical transmission band traveling in a first direction to one transport path and reflective to signals of a second optical transmission band traveling in an opposite direction to a separate transport path. However, Meli teaches the optical filter is adapted to be coupled in an alternating arrangement to a second filter (i.e., selective couplers 4, Figs. 1, 3A, 3B and 12, col. 7, lines 9-46 and lines 54-57, and col. 14, lines 5-38) and Cearns teaches the use of an optical filter (i.e., optical filter 20, Fig. 4) that is transmissive to signals (i.e., transmissive to signals $\lambda 1, \lambda 2, \ldots, \lambda 8$) of one optical transmission band traveling in a first direction to one transport path (i.e., transport path 3) and reflective to signals (i.e., reflective to signals $\lambda 10, \lambda 11, \ldots, \lambda 16$) of a second optical transmission band traveling in an opposite direction to a separate transport path (i.e., transport path 2)(see col. 5, lines 23-29). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the first optical filter and the second filter are in an alternating arrangement and the use of an optical filter that is transmissive to signals of one optical transmission band traveling in a first direction to one transport path and reflective to signals of a second optical transmission band

traveling in an opposite direction to a separate transport path as taught by Meli and Cearns in the system of Sakamoto. One of ordinary skill in the art would have been motivated to do this since Meli suggests in column 7, lines 9-46 and lines 54-57, and col. 14, lines 5-38 and Cearns suggests in column 5, lines 23-29 that using such the optical filter is adapted to be coupled in an alternating arrangement to a second filter the use of an optical filter that is transmissive to signals of one optical transmission band traveling in a first direction to one transport path and reflective to signals of a second optical transmission band traveling in an opposite direction to a separate transport path have advantage of allowing reducing the insertion loss.

Regarding claims 26 and 29, Sakamoto teaches further comprising means for amplifying (31A, 31B)(Fig. 5), demultiplexing (42), and demodulating the second signal (col. 6, lines 51-67, col. 7, lines 1-10 and col. 13, lines 16-39).

Regarding claim 27, Sakamoto further teaches the means (i.e., circulator filter 225) for filtering comprises:

an input port for receiving the first signal from the first path,

a bi-directional input/output port for applying the first signal to the optical medium and for receiving the second signal from said optical medium, and

a reflection port for applying the second signal to the separate path (Figs. 16-20).

4. Claims 23-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Islam (US Patent No. 6,631,028) in view of Meli et al (US Patent No. 5,995,259) and further in view of Cearns et al (US Patent No. 5,943,149).

Regarding claim 23, referring to figures 6b, 7b, 8b, 9b, 10b and 11b, Islam teaches apparatus, comprising:

means for filtering (100)(Fig. 6b), and

means (i.e., transmitter 92)(Fig. 6b) for transmitting a first signal in a first signal band (i.e., band #1, Fig. 6b) from a first path onto an optical medium (i.e., optical fiber transmission line 12, Fig. 6b) via said means (100) for filtering, said means (100) for filtering being substantially transmissive to signals in the first signal band (i.e., band #1) and reflecting a second signal in a second signal band (i.e., band #2) received from the optical medium onto a path separate from the first path (col. 4, lines 18-23 and lines 57-61 and col. 6, lines 35-50).

Islam differs from claim 23 in that he does not specifically teach wherein means for filtering is adapted to be coupled in an alternating arrangement to a second means for filtering and the use of an optical filter that is transmissive to signals of one optical transmission band traveling in a first direction to one transport path and reflective to signals of a second optical transmission band traveling in an opposite direction to a separate transport path. However, Meli teaches means for filtering is adapted to be coupled in an alternating arrangement to a second means for filtering (i.e., selective couplers 4, Figs. 1, 3A, 3B and 12, col. 7, lines 9-46 and lines 54-57, and col. 14, lines 5-38) and Cearns teaches the use of an optical filter (i.e., optical filter 20, Fig. 4) that is transmissive to signals (i.e., transmissive to signals $\lambda 1, \lambda 2, \ldots, \lambda 8$) of one optical transmission band traveling in a first direction to one transport path (i.e., transport path 3) and reflective to signals (i.e., reflective to signals $\lambda 10, \lambda 11, \ldots, \lambda 16$) of a second optical

transmission band traveling in an opposite direction to a separate transport path (i.e., transport path 2)(see col. 5, lines 23-29). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the first optical filter and the second filter are in an alternating arrangement and the use of an optical filter that is transmissive to signals of one optical transmission band traveling in a first direction to one transport path and reflective to signals of a second optical transmission band traveling in an opposite direction to a separate transport path as taught by Meli and Cearns in the system of Islam. One of ordinary skill in the art would have been motivated to do this since Meli suggests in column 7, lines 9-46 and lines 54-57, and col. 14, lines 5-38 and Cearns suggests in column 5, lines 23-29 that using such means for filtering is adapted to be coupled in an alternating arrangement to a second means for filtering and the use of an optical filter that is transmissive to signals of one optical transmission band traveling in a first direction to one transport path and reflective to signals of a second optical transmission band traveling in an opposite direction to a separate transport path have advantage of allowing reducing the insertion loss.

Regarding claims 24 and 30, Islam further teaches wherein one of the first and second signals is a C-band and the other is an L-band signal (Fig. 2b, col. 1, lines 58-67 and col. 4, lines 62-67).

Regarding claims 25 and 28, Islam further teaches wherein the means for transmitting the first signal comprises: means for modulating, multiplexing , and amplifying a plurality of input signals to form the first signal, and wherein the apparatus further connects to the optical medium (Figs. 6b-10b).

Islam differs from claims 25 and 28 in that he does not specifically teach wherein the optical filter is adapted to be coupled in an alternating arrangement to a second filter and the use of an optical filter that is transmissive to signals of one optical transmission band traveling in a first direction to one transport path and reflective to signals of a second optical transmission band traveling in an opposite direction to a separate transport path. However, Meli teaches the optical filter is adapted to be coupled in an alternating arrangement to a second filter (i.e., selective couplers 4, Figs. 1, 3A, 3B and 12, col. 7, lines 9-46 and lines 54-57, and col. 14, lines 5-38) and Cearns teaches the use of an optical filter (i.e., optical filter 20, Fig. 4) that is transmissive to signals (i.e., transmissive to signals $\lambda 1$, $\lambda 2, \ldots, \lambda 8$) of one optical transmission band traveling in a first direction to one transport path (i.e., transport path 3) and reflective to signals (i.e., reflective to signals $\lambda 10$, $\lambda 11, \ldots, \lambda 16$) of a second optical transmission band traveling in an opposite direction to a separate transport path (i.e., transport path 2)(see col. 5, lines 23-29). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the first optical filter and the second filter are in an alternating arrangement and the use of an optical filter that is transmissive to signals of one optical transmission band traveling in a first direction to one transport path and reflective to signals of a second optical transmission band traveling in an opposite direction to a separate transport path as taught by Meli and Cearns in the system of Islam. One of ordinary skill in the art would have been motivated to do this since Meli suggests in column 7, lines 9-46 and lines 54-57, and col. 14, lines 5-38 and Cearns suggests in column 5, lines 23-29 that using such the optical filter is adapted to be

coupled in an alternating arrangement to a second filter and the use of an optical filter that is transmissive to signals of one optical transmission band traveling in a first direction to one transport path and reflective to signals of a second optical transmission band traveling in an opposite direction to a separate transport path have advantage of allowing reducing the insertion loss.

Regarding claims 26 and 29, Islam further teaches means for amplifying, demultiplexing, and demodulating the second signal (Figs. 6b-10b).

Regarding claim 27, Islam further teaches the means (100)(Fig. 6b) for filtering comprises:

an input port for receiving the first signal from the first path,

a bi-directional input/output port for applying the first signal to the optical medium and for receiving the second signal from said optical medium, and

a reflection port for applying the second signal to the separate path (Figs. 6b-10b)

5. Claims 3, 18, 22, 24 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakamoto et al (US Patent No. 6,490,064) and Meli et al (US Patent No. 5,995,259) in view of Cearns et al (US Patent No. 5,943,149) and further in view of Kakui (US Patent No. 6,549,315).

Regarding claims 3, 18, 22, 24 and 30, Sakamoto as modified by Meli and Cerans discloses all the aspects of the claimed invention as set forth in the rejection to claims 1, 23 and 28 above, except fails to teach the optical transmission bands are L band and C-band. However, Kakui teaches an optical transmission system wherein the

optical transmission bands are L band and C-band (Figs. 1 and 2, col. 4, lines 65-67, and col. 5, lines 1-14). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to use the optical transmission bands are L band and C-band as taught by Kakui in the system of Sakamoto modified by Meli and Cearns. One of ordinary skill in the art would have been motivated to do this since Kakui suggests in column 1, lines 16-39 that using such optical transmission bands such as L band and C-band would minimize the transmission loss of optical fibers used as optical transmission line in the vicinity of a wavelength band as C-band and L-band and allow a plurality of optical wavelength signals transmitted in a wide band with high speed and large capacity.

6. Claims 4-7, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakamoto et al (US Patent No. 6,490,064) and Meli et al (US Patent No. 5,995,259) in view of Cearns et al (US Patent No. 5,943,149) and further in view of Alexander et al (US Patent No. 6,233,077).

Regarding claims 4, 6 and 14, Sakamoto as modified by Meli and Cearns discloses all the aspects of the claimed invention as set forth in the rejection to claim 1 above, except fails to teach a first set of one or more optical translator units for translating received wavelengths to wavelengths of the first transmission band, the optical translator units being coupled to an optical multiplexer unit and an optical demultiplexer unit coupled to a second set of optical translator units for translating wavelengths of the second transmission band to said received wavelengths. However,

Alexander teaches a first set of one or more optical translator units (i.e., optical remodulators 30)(Fig. 1) for translating received wavelengths to wavelengths of the first transmission band, and these optical translator units (optical remodulators 30) being coupled to an optical multiplexer unit (i.e., optical combiner 50)(Fig. 1) and an optical demultiplexer unit (i.e., optical splitter 90)(Fig. 1) coupled to a second set of optical translator units (i.e., remodulating selectors 100)(Fig. 1) for translating wavelengths of the transmission band to the received wavelengths (col. 4, lines 7-52, col. 7, lines 60-67, and col. 8, lines 1-39). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to add a optical translator unit at the output stage of each transmitter and add a optical translator unit at the outputs from the optical demultiplexer in the system of Sakamoto modified by Meli and Cearns as taught by Alexander. One of ordinary skill in the art would have been motivated to do this since Alexander suggests in column 4, lines 7-27 that using such optical translator units would allow the wavelengths emitted by the optical translator units are selected to be within the 1500 nanometer range, the range in which the minimum signal attenuation occurs for silica-based fibers.

Regarding claims 5, 7 and 15, Sakamoto further teaches the first node further includes at least one optical amplifier (280) coupled between an output of the multiplexer (221) and the input port of the first combiner/separator unit (i.e., circulator filter 225) and at least one optical amplifier (281) coupled between the output port of the first combiner/separator unit (i.e., circulator filter 225) and an input of the demultiplexer (222)(Fig. 18).

7. Claims 8, 9, 16 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakamoto et al (US Patent No. 6,490,064) and Meli et al (US Patent No. 5,995,259) in view of Cearns (US Patent No. 5,943,149) and further in view of Alexander et al (US Patent No. 6,281,997).

Regarding claims 8, 9, 16 and 31, Sakamoto as modified by Meli and Cearns discloses all the aspects of the claimed invention as set forth in the rejection to claim 1 above, except fails to teach the filters are thin film wide-band filters (for claims 8 and 16) and the filters include a transmissive insertion loss in the range of 1.3 to 1.7 dB and reflective insertion loss in the range of 0.3 to 0.9 dB (for claims 9 and 31). However, Alexander in US Patent No. 6,281,997 teaches the filters (220)(Fig. 2) are thin film wide-band filters and the filters include a transmissive insertion loss in the range of 1.3 to 1.7 dB and reflective insertion loss in the range of 0.3 to 0.9 dB (col. 3, lines 48-67 and col. 5, lines 14-22). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to use the thin film wide-band filters to modify the filters in the combiner/separator of the system of Sakamoto modified by Meli and Cearns as taught by Alexander. One of ordinary skill in the art would have been motivated to do this since Alexander suggests in column 5, lines 14-22 that using such thin film wide-band filters would introduce little power loss to the selected sub-groups of channels. For example, the power loss associated with the channels reflected by the thin film filters is about 0.5 dB and the loss associated with the channels transmitted through the filter is about 0.7 dB.

Response to Arguments

8. Applicant's arguments with respect to claims 1-9, 12-16, 18, and 21-31 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Phan whose telephone number is (571)272-3035.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.

Hanh Phan

Patent Examiner

10/07/2004